A Multi-Level Machine Learning Approach to the Management of American Chestnut Populations

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Machine learning is used to investigate strategies for managing populations of fungus-blighted American Chestnut. An empirically derived simulation of forest development under infection by C. parasitica, is used to train a set of neural net classifiers that make (imperfect) predictions about tree outcomes based upon current status of each tree and its proximal neighbors. These classifiers are then used as inputs to a reinforcement learning (RL) algorithm, generating policies of action for improving forest health. Details of the models and the policy outcomes of the RL stage will be presented.